UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/955,368	09/18/2001	Harish Viswanathan	16	8345

46363 7590 12/20/2005

PATTERSON & SHERIDAN, LLP/
LUCENT TECHNOLOGIES, INC
595 SHREWSBURY AVENUE
SHREWSBURY, NJ 07702

EXAMINER	
MEEK, JACOB M	

ART UNIT	PAPER NUMBER
2637	

DATE MAILED: 12/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/955,368	VISWANATHAN, HARISH	
	Examiner	Art Unit	
	Jacob Meek	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-12 and 14-20* is/are rejected.

7)☒ Claim(s) *4,5,13,21 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed October 3, 2005 have been fully considered but they are not persuasive. Examiner's rejection of claims 1- 3, 6 – 12, and 15 – 20 will be maintained .

Examiner agrees that applicant's matrix differs from that described by Whinnet. However, as claimed in claims 1 – 3, 6 –12, and 15 – 20, examiner does find that specificity is given to the conjugation technique as argued by applicant, therefore, Whinnet's disclosure is interpreted as providing a conjugation technique that would read on the original or amended claims as there is no requirement for a particular matrix specified in the claim.

2. Applicant's arguments, see page 11, filed October 3, 2005, with respect to applicant's matrix construction have been fully considered and are persuasive. The rejection of claims 4, 5, 13, 21 and 22 has been withdrawn.

3. Restatement of previous rejections

Claims 1, 6 –10, 14 – 20, are rejected under 35 U.S.C. 102(e) as being anticipated by Whinnett et al (US Patent 6,317,411).

With regard to claim 1, Whinnett discloses a method for use in a system to transmit four transmit sequences (see figure 5, 20 output and column 6, lines 17 – 26 where this is interpreted as equivalent) over at least four antennas (see Figure 5, 100, 102, 104, 106) compromising the step of space – time coding at least two pairs of symbols substreams to form a respective pair of transmit sequence chains

(see Figure 5, 88 & 90 inputs and column 5, lines 36 – 49 where this is interpreted as being equivalent) where the space-time coding is such that at least on the formed pairs is a function of a respective pair (see Figure 5, 88 & 90 outputs, where S_1S_2, and S_3S_4, create unique from other pairs formed) and not a function of other pairs.

With regard to claim 6, Whinnett discloses coding a first pair of symbol substreams (see figure 5, 82 where this is interpreted as equivalent) to form a first transmit stream that is not a function of second symbol pair (see figure 5, 84), and coding a second pair of symbol substreams to form a second transmit stream that is not a function of first symbol pair (see figure 5, 84 where this is interpreted as equivalent).

With regard to claim 7, Whinnett teaches the transmission of at least one of the transmit sequence chains on one the respective antennas (see Figure 5, 100, 102, 104, 106 and column 6, lines 23 – 34).

With regard to claim 8, Whinnett teaches the spreading of symbols of transmit sequence chains using a spreading code (see Figure 5, 92 & 94 and column 6, lines 28 – 29).

With regard to claim 9, Whinnett teaches the channel coding of a least 4 data streams, and mapping each of the channel coded data streams to produce symbol sub streams (see column 5, lines 17 - 26).

With regard to claims 10, and 14, Whinnett discloses an apparatus utilizing the method of claims 1, and 8 respectively, as claimed above and therefore it would have been obvious considering the aforementioned rejection for the method claims 1, and 8.

With regard to claim 15, Whinnett discloses a transmitter with an input (see Figure 5, 20 where encoded traffic channel source is interpreted as having a non-encoded data input), at least one channel encoder (see Figure 5, 20) between input and space-time encoder (see Figure 5, 88 & 90 where transformer is interpreted as equivalent functionality) the channel encoder to channel code a data substream (see column 1, lines 41 - 54).

With regard to claim 16, Whinnett discloses an Encoded and Interleaved Traffic Channel Data Source (see figure 5, 20 and column 1, lines 40 – 49 which is interpreted as providing equivalent functionality).

With regard to claim 17 and 18, Whinnett discloses his transmitter system is useful for CDMA, and utilizes base and mobile stations (see column 1, lines 17 – 35).

With regard to claim 19, Whinnett discloses a plurality of radio frequency units (see Figure 5, 92, 96 & 98 and column 6, lines 35 – 43 where this is interpreted as equivalent) having an coupled to output of space time encoder (see Figure 5, 88 & 90) each radio frequency unit being adapted to convert baseband to RF.

With regard to claim 20, Whinnett discloses a receiver with at least one antenna (see Figure 7, 120) and a matrix multiplier for multiplying received symbol streams having at least two pairs of consecutive rows (see figure 7, 128 & 130 and column 6, line 61 – column 7, line 3 where this is interpreted as providing equivalent functionality).

Claims 2, 3, 11 and 12, are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Whinnet.

With regard to claim 2, Whinnett teaches that each transmit sequence has a duration of four symbol periods (see Figure 5, $S_1S_2S_3S_4$ where this is interpreted as equivalent). Whinnett teaches a method of transmitting each transmit sequence of a particular transmit sequence chain is a function of a symbol of one of the symbol streams (see Figure 5, 88 and 90 outputs). Whinnett discloses substream pairs are complex conjugates and portions of the four transmit sequence chains are representable by a where each row of a matrix represents one transmit sequence of a different one of the transmit sequence chains (see column 6, lines 7 – 21) and each column represents a symbol period (see column 6, lines 7 – 21 where this is interpreted as equivalent). Applicant's claimed invention appears to be an obvious variation of the orthogonal technique and would have been obvious to one of ordinary skill in the art (see column 12, lines 58 – 63).

With regard to claim 3, Whinnet teaches his matrix is orthogonal (see column 6, lines 7 – 21 where this is interpreted as an orthogonal matrix).

With regard to claims 11 and 12, Whinnett discloses an apparatus utilizing the method of claims 2, and 3, as claimed above and therefore it would have been obvious considering the aforementioned rejection for the method claims 2, and 3.

Allowable Subject Matter

4. Claims 4, 5, 13, 21, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other Cited Prior Art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Calderbank et al (US-6,088,408) discloses a method and apparatus for space-time coding of transmit signals.

Foschini et al (US-6,317,466) discloses a method and apparatus for space-time coding of transmit signals.

Boariu et al (US-6,865,237) discloses a method and apparatus for space-time coding of transmit signals.

Kuchi et al (US 2002/0172293) discloses a method and apparatus for space-time coding of transmit signals.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Meek whose telephone number is (571)272-3013. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571)272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMM
12/12/05

TEMESGHEN GHEBRETINSAE
PRIMARY EXAMINER
12/15/05